Mr. Kusche at Fort Yukon, Nulato, and Rampart (64°–67° N. L.) are of unusual interest, because, with the single exception of the specimens of *Leptothorax kincaidi* taken by Mr. F. H. Whitney on the Upper Kugarok River, near Nome, and recorded in my paper on the mountain ants of western North America (Proc. Amer. acad. sci., 1917, **52**, p. 512), no American ants had previously been found so far north. Fort Yukon, the remotest of the localities, is, in fact, situated on the Arctic Circle, which, I believe, may safely be taken as the extreme northern limit of our ant fauna. Owing to the important bearing of all the elements of the Alaskan biota on questions of geographical distribution and on the question of a former Alaskan-Siberian land-bridge in particular, it seems advisable to publish a brief annotated list of the known Alaskan Formicidae together with a record of the various localities in which they were collected.

1. Myrmica brevinodis Emery var. sulcinodoides Emery.

Pergande records this form from Sitka and says that the palest specimens in his series agreed exactly with those he saw from Hill City, South Dakota. The specimen from Homer, Alaska (A. Mehner) referred by me to the var. *frigida* Forel (Bull. Wisc. nat. hist. soc., 1907, **5**, p. 78) may be more properly referred to *sulcinodoides*. Indeed, I doubt whether *frigida* can be maintained as a distinct variety. Forel's var. *whymperi* is also, in my opinion, a synonym of *sulcinodoides* Emery. The latter is known from higher elevations, up to 11,000 feet, in the Rockies of British Columbia, Utah, Colorado, and New Mexico and in the Sierra Nevada. In the paper cited above I called attention to the peculiar greenish yellow color of the larvae of this ant and their oily luster.

2. Myrmica brevinodis var. alaskensis Wheeler.

Recently described from workers taken at Seward, on the Kenai Peninsula by Mr. F. H. Whitney (Proc. Amer. acad. sci., 1917, **52**, p. 503). Numerous specimens from two colonies found by Mr. Kusche at Fort Yukon and in the Pynaw Mts., near Rampart, also belong to this variety.

3. MYRMICA BREVINODIS var. KUSCHEI, var. nov.

Worker. Length 3–3.5 mm.

Very similar in sculpture, pilosity, and color to the var. *alaskensis* but averaging somewhat smaller, with shorter and straight, instead of curved, epinotal spines, the antennal scapes very distinctly broader and flatter at the base and with the middorsal portion of the postpetiole smooth and shining. The clypeus has only about eight coarse longitudinal rugae as in *alaskensis*.

Female (deälated). Length 5.5 mm.

Much darker than the worker, the head, thorax, petiole, postpetiole, and gaster being castaneous, the mandibles, antennae, and legs brownish yellow. Rugae on the body coarse, those on the pronotum very coarse and vermiculate, on the remainder of the thorax longitudinal, finer on the pleurae than on the mesonotum and scutellum. Postpetiole above without a smooth area, sharply, regularly, and concentrically rugose, the rugae transverse at the posterior border. Surface of body distinctly more shining than in the worker; pilosity very similar.

Described from a female and twenty-three workers taken by Mr. Kusche from a single colony at Ketchikan.

The worker and female of this variety are readily distinguished from the corresponding phases of the other described forms of *brevinodis* by the peculiar sculpture of the dorsal surface of the postpetiole, the sculpture in the worker recalling that of *Myrmica scabrinodis* var. *detritinodis* Emery, while the postpetiolar rugae in the females of the other forms are not regular and concentric but longitudinal and irregular or interrupted.

4. MYRMICA SCABRINODIS Nylander subsp. LOBICORNIS Nyl. var. LOBIFRONS Pergande.

Pergande described this form as *M. sabuleti* var. *lobifrons* but his description is so brief as to apply to almost any small Myrmica. He says merely that it measures 3 mm. and is dark brown or black, with the "mandibles, antennae, legs, sides of the thorax and of the abdomen more or less distinctly yellowish brown, reddish brown or almost black," and adds that it is "closely related to a form of *Myrmica sabuleti* inhabiting South Dakota, but is somewhat larger and much

darker, with the sculpturing of the head and thorax coarser and the hairs stouter and shorter." He cites no locality for the types (No. 5279, U. S. N. M.), which seem to be lost. As *sabuleti* is itself now regarded as merely a variety of *scabrinodis*, it is clear that *lobifrons* must be referred to some other form. I conjecture that it is a variety of *lobicornis*, which I have recently shown (Proc. Amer. acad. sci., 1917, **52**, p. 504) to be actually represented in America by Forel's var. *glacialis* of the Rocky Mts. and Sierra Nevada. Perhaps *glacialis* is merely a synonym of *lobifrons*, but this can be determined only if Pergande's types are found or by further collecting in Alaska.

5. Leptothorax acervorum Nylander subsp. canadensis Provancher var. kincaidi Pergande.

This variety was described as *L. yankee* Emery var. *kincaidi* from a female and twelve workers taken by Professor Kincaid at Metlakahtla. I have recorded it from the Upper Kugarok River, near Nome (65° N. L.) where it was taken by Mr. F. H. Whitney. Numerous workers taken by Mr. Kusche at Skagway and White Pass agree even more closely with Pergande's description, as they are somewhat smaller and lack the crescentic black spot on the pronotum. Perhaps the more northern specimens should be regarded as a distinct variety.

6. Lasius niger Linné var. sitkaënsis Pergande.

This form, not represented among the specimens collected by Mr. Kusche, was described by Pergande as a subspecies of *L. niger* from twenty-five workers taken at Sitka. As stated in my recent paper on the mountain ants, I believe it to be identical with a form which I have found to be common throughout the Canadian zone. Pergande mentions its similarity to *Lasius subniger* of Maine (*recte neoniger* Emery). If I am right in my identification of the Alaskan form it is merely a variety and not a subspecies of the typical Eurasian *niger*.

7. Formica sanguinea Latreille subsp. subnuda Emery.

Mr. Kusche secured many workers of this subspecies from several colonies at Skagway and White Pass, Alaska and White Horse, Yukon.

All agree with the typical form of the subspecies from the Canadian zone of southern British America and the United States in lacking erect hairs on the thorax and in having only a very few inconspicuous hairs on the dorsal surface of the head. The slaves in several of the colonies were workers of *F. fusca* var. *gelida* and var. *neorufibarbis*. Some of the colonies contained a few small *subnuda* pseudogynes. If Wasmann's and Muckermann's contention is correct, that pseudogynes are produced only as the result of the presence of staphylinid beetles of the tribe Lomechusini (species of *Xenodusa* in North America) in the *sanguinea* nests, we must suppose that these beetles range as far north as Alaska. This has not been demonstrated, so that my suggestion that pseudogynes may also be produced by other causes, is still worthy of consideration, especially as Mr. Horace Donisthorpe writes me that he is also of the opinion that pseudogynes occasionally make their appearance in British *sanguinea* colonies which have never been infested by lomechusine parasites.

8. Formica fusca Linné.

A number of workers taken by Mr. Kusche at Fort Yukon belong to the typical black form of this species, which is widely distributed, not only in the Canadian zone of North America, as I have shown in previous articles (Bull. M. C. Z., 1913, **53**, p. 496; Proc. Amer. acad. sci., 1917, **52**, p. 545) but also throughout boreal Eurasia as far north as latitude 65°.

9. Formica fusca var. marcida Wheeler.

I refer to this variety a deälated female and thirty-six workers taken by Mr. Kusche from a single colony at White Horse, Yukon, and a series of workers which he took at Fort Yukon, Alaska. The former are fully as large as the typical *fusca* and have the mandibles, antennae, and legs of an even paler and purer brownish yellow color than in the types which were taken in the Selkirk Mts. of British Columbia, the latter are much more like the types in size and color. This variety has also been taken in Alberta, Manitoba, Washington, and California but always in an alpine environment.

10. Formica fusca var. neorufibarbis Emery.

Under the name *F. neorufibarbis* Pergande included both this and the following variety. I believe that only his specimens from Metlakahtla, which he calls the palest form, belong to *neorufibarbis*, those from Sitka and Kadiak being referable to the var. *gelida*. Mr. Kusche secured several series of workers at Skagway and Ketchikan, Alaska and White Horse, Yukon. The large individuals have the thorax, petiole, and legs uniformly red, without traces of infuscation and are exactly like those taken by myself during the summer of 1915 in the Canadian Rockies and the Sierra Nevada.

11. Formica fusca var. gelida Wheeler.

The study of a long series of workers and deälated females taken by Mr. Kusche at Skagway, Nulato, Ketchikan, and in the Pynaw Mts., near Rampart, Alaska, and at White Horse, Yukon, and of a few workers from Seward (F. H. Whitney) and Kasiloff Lake, on the Kenai Peninsula, shows that this variety cannot be satisfactorily distinguished from *neorufibarbis* except by the color of the larger workers, which in *gelida* have the legs and thorax more or less and often deeply infuscated. Darker specimens seem to pass over into the typical *fusca*, while immature specimens are difficult to distinguish from the var. *marcida*.

12. Camponotus herculeanus Linné var. whymperi Forel.

This variety is not only widely distributed through the Canadian and Hudsonian zones of North America, but is said to occur also in Siberia. Mr. Kusche obtained numerous worker and female specimens from several colonies at Fort Yukon, Skagway, and Nulato, Alaska and White Horse, Yukon. I have also seen specimens from Kasiloff Lake, on the Kenai Peninsula (Berlin Museum) and Koyukuk (W. J. Peters). The variety differs from the typical *herculeanus* merely in the slightly longer and more abundant, subappressed hairs on the tibiae. As I find this character to be inconstant on comparison of American and European specimens, *whymperi* would seem to be an insignificant if not a spurious variety.

Postscript.—Just after correcting the first proof of this paper Mr. S. A. Rohwer informed me that he had succeeded in finding in the U. S. N. M. the types of the varieties of ants described by Pergande from Alaska and that he was sending me paratypes of *Lasius sitkaënsis*, *Myrmica lobifrons*, and *Leptothorax kincaidi* and a couple of workers identified by Pergande as belonging to *Myrmica sulcinodoides*. The conclusions I have reached from a study of the specimens may be briefly stated:—

(1). *Myrmica brevinodis* var. *sulcinodoides* Emery.— The specimens from Sitka referred by Pergande to this variety differ somewhat in color from the form I regard as typical *sulcinodoides*, as they have the head and gaster dark brown, instead of black, and the remainder of the body and appendages yellowish brown instead of deep red. I should be inclined to refer them to the var. *subalpina* Wheeler, but as Pergande refers to differences of color in his series, the specimens before me may be somewhat immature.

(4). *Myrmica scabrinodis* subsp. *lobicornis* var. *lobifrons* Pergande.— The types and paratypes are from Metlakahtla and the two of the latter received from Mr. Rohwer belong to different species which were not distinguished by Pergande. One is identical with *M. scabrinodis lobicornis* var. *glacialis* Forel as I find by comparison with a cotype from Vermillion Pass, Alberta, received from Professor Forel many years ago. The var. *glacialis* Forel therefore becomes a synonym of *lobifrons* Pergande. The other specimen belongs to *Myrmica brevinodis* and agrees perfectly with the cotypes of the var. *kuschei* described above. That Pergande really based his variety on a specimen with the antennal scape toothed at the base, is shown by his attaching the form to *Myrmica sabuleti*.

(5). *Leptothorax acervorum* subsp. *canadensis* var. *kincaidi* Pergande. Two worker paratypes from Metlakahtla agree closely with the specimens recorded above from Skagway and White Pass in size, form, and sculpture, but the latter have the light portions of the body and appendages paler and more reddish and there are no traces of infuscation on the thoracic dorsum and the summits of the petiolar and postpetiolar nodes. The Pergande specimens also have the legs without the short, erect or suberect hairs which are clearly visible in the specimens taken by Mr. Kusche. The latter, therefore, are more like the typical *canadensis*.

(6). *Lasius niger* var. *sitkaënsis* Pergande.— The interpretation of this variety given in my recent paper, "The mountain ants of western North America" (Proc. Amer. acad. sci. 1917, **52**, p. 524),

is shown by a study of two paratypes to be correct. The paratypes are somewhat larger and darker than most of the specimens in my collection from boreal portions of the United States and British America, but series from Flathead Lake, Montana and Pullman, Washington are almost identical in size and coloration with the paratypes from Sitka. Smaller and darker specimens grade into the var. *neoniger* Emery.